## ARATION AND POWER OF ATTORNEY - ORIGINAL APPLICATION

MAR 1 8 2004

Attorney's Docket No. 201-1448

s a below named inventor, I hereby declare:

My(residence) post office address and citizenship are as stated below next to my name;

I verily believe I am the original, first and sole inventor or an original, first and joint inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled

#### STEERING LINKAGE BALL JOINT ASSEMBLY

the specification of which is attached hereto.

I have reviewed and understand the contents of the specification identified above, including the claims.

I acknowledge my duty to disclose information of which I am aware that is material to the examination of this application in accordance with Section I.56(a), Title 37 of the Code of Federal Regulations; and as to application for patents or inventor's certificate on the invention filed in any country foreign to the United States of America. prior to this application by me or my legal representatives or assigns,

[]	no such applications have been filed, or	
[x]	such applications have been filed as follows:	
[]	I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below	v

COUNTRY	APPLICATION NO.	DATE OF FILING (month, day, year)	DATE OF ISSUE (month, day, year)	PRIORITY CLAIMED UNDER 35 USC 119	Additional provisional application numbers are listed
				YES	on a supplemental priority data sheet
				<u>.</u>	PTO/SB/02B attached hereto.

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application Number)	(Filing Date)	· ·	(Status - patented, pending, abandoned)
(Application Number)	(Filing Date)		(Status - patented, pending, abandoned)

POWER OF ATTORNEY: - I/we hereby appoint Practitioners at Customer No. 022844, as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office and all foreign Patent Offices.

#### Address all correspondence and telephone calls to:

Gary A. Smith Ford Global Technologies, Inc. One Parklane Boulevard 600 East Parklane Towers Dearborn, Michigan 48126

Telephone: (313) 323-0541

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

NAME AND MAILING ADDRESS OF INVENTOR:	RESIDENCE	CITIZENSHIP	SIGNATURE	DATE
Jackson E. Barry 22830 Beech Dearborn, MI 48124 US	Dearborn, MI 48124 US	U.S.A	JERnyl	B/h/bz

Docket I.D.: 201-1448 S.N. 10/064,734

MAR 1 8 2004

# DECLARATION OF PRIOR INVENTORSHIP UNDER 37 C.F.R. 1.131

I, Jackson E. Barry, hereby declare that I invented the subject matter of the claims of the present patent application (S.N. 10/064,734) as amended on March 18, 2004, prior to the publication date of US2003/0137120 Al (Thompson et al.). I further declare that my conception of the invention took place in the United States.

As proof of my conception of the invention prior to the effective date of the Thomson et al. reference, I supply herewith the following documents:

Attachment A is copies of renderings produced from a CAD (Computer Aided Design) model of the 2005 Ford P131 truck steering system. I met with Mr. Gary Smith, Ford patent attorney, at a meeting on November 14, 2001, and briefed him on the new steering geometry to allow him to prepare a patent application. Although these pages are not dated, I declare that I printed these very pages on the day of that meeting and gave them to Mr. Smith. Page A1 of shows a steering knuckle arm having a dual-tapered through hole as is claimed in my patent application. This Attachment 2 gives dimensions of the steering system that, taken along with the drawings of Attachment describe the invention as

Attachment B is a copy of a document dated Oct. 22, 2001, that gives the final design dimensions of the steering system of the Ford P131 truck. The final P131

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steering design in existence on that date included the precise geometry shown in the CAD renderings included as Attachment A.

Attachment C is a copy of two e-mails dated Sept. 17, 2001, and Sept. 19, 2001, that I authored and sent to my colleagues at Ford Motor Company. These show that the design of the steering system of the Ford P131 truck was finalized on or prior to Sept. 17, 2001.

Attachment D is a copy of a production drawing generated by a supplier to Ford Motor Co. at my direction. The drawing shows that knuckle (9) has upper and lower tapered surfaces, and that the stud comprises two portions (8,19) each of which has a conical shank portion engaging its respective tapered surface. The date in title block is Feb. 8, 2002, and the approval date is June 17, 2002. Both of these dates are prior to the publication date of the Thompson et al. reference.

3-18-04

(date)

Jackson E. Barry

Left Wheel   Did   Did	or agraphic plant of TMI		g de la cos	ss Steer		Geometry - Rev. 7.1 - 10/22/01	7.1	- 10/2	2/01		
Left Wheel   D1#   Points   D1#   X   X   X   X   X   X   X   X   X			25	2005 (	30	II Mono (F450 / F!	550	) - 7K	and the state of t	and the control of th	
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Y         Z         X         Y           944 02         1279 67         6         Lower Ball Joint (Axis Point)         6         1539 38         844 02           -784.86         1566.93         7         Upper Ball Joint (Axis Point)         7         1564.36         784.86           -868.00         1333.07         12         Tre Rod © Knuckle         12         1362.00         868.00           -299.17         1555.00         13         Drag link to Drag Link         13         1362.00         868.00           -301.52         1625.00         15         Pittman Arm to Geart (Lower Axis Point)         15         15           -299.17         1625.00         13a Ball Joint Articulation         10         1554.17         898.00           -299.17         1625.00         13a Ball Joint Articulation         10         1554.17         894.66           -299.17         1628.00         143.00         Wheel Center         10         1554.17         894.86           -890.00         177.34         1550.00         15         Breing Damper to Frame         19         1554.17         894.86           -891.86         19         Track Bar @ Articulation         19         1383.69         363.63			Left Wheel		# # #	Points	# # #		Right Wheel		
-844.02         1279.67         6         Lower Ball Joint (Axis Point)         6         1539.38         844.02           -784.86         1556.33         7         Upper Ball Joint (Axis Point)         7         1564.36         784.86           -868.00         1393.07         12         Tie Rod (b Drag Link         12         1362.00         868.00           -299.17         1550.00         13         Drag link to Pitman Arm         13         13         868.00           -299.17         1550.00         13         Drag link to Pitman Arm         12         1362.00         868.00           -299.17         1655.00         13         Ball Joint Articulation         13         12         14.36.00         13         888.00         143.19         20         1443.60         14         1554.17         914.86           -299.17         165.00         13         Ball Joint Articulation         1         1554.17         914.86           -299.17         165.00         143.19         9         Wheel Center         9         1554.17         914.86           -974.86         1062.79         10         Tire Patch         11         1554.17         914.86           -974.86         1550.84         15		×	<b>&gt;</b>	Z				×	<b>X</b>	2	
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299.17         1550.00         13         Tile Rod to Drag Link         14         Tile Rod to Drag Link         18         185.00         18         688.00           -301.52         1625.00         15         Pittman Arm to Gear (Lower Axis)         15         16         15         15         16		1362.00	-868.00	1393.07	12	Tie Rod @ Knuckle	12	1362.00	868.00	1393.07	ļ
299.17         1550.00         13         Drag link to Pltman Arm         13           -301.52         1625.90         15         Pittman Arm to Gear (Lower Axis         15           -301.52         1837.79         2         Upper Sector Shaft (Upper Axis Point)         22           -293.17         1626.00         13a         Ball Joint Articulation         9         1534.17         974.86           -974.86         1483.79         9         Wheel Center         9         1554.17         974.86           -974.86         1062.79         10         Tire Patch         10         1554.17         974.86           -974.86         1062.79         10         Tire Patch         11         5pindle Alignment Point         11         1554.17         974.86           -809.00         1443.79         9         Wheel Center         9         1554.17         974.86           -809.00         1443.79         15 Spindle Alignment Point         11         1554.17         974.86           -450.84         1550.91         9         Track Bar @ Frame         9         1463.11         486.01           -450.84         1450.90         1         Radius Arm @ Frame         9         145.85         145.85 <t< td=""><td></td><td></td><td></td><td></td><td>14</td><td>Tie Rod to Drag Link</td><td>14</td><td>1362.00</td><td>868.00</td><td>1477.07</td><td><u> </u></td></t<>					14	Tie Rod to Drag Link	14	1362.00	868.00	1477.07	<u> </u>
301.52         1625.90         15         Pittman Arm to Gear (Lower Axis Point)         15         Pittman Arm to Gear (Lower Axis Point)         22         Upper Sector Shaft (Upper Axis Point)         22         23         23         24         25         25         25         25         25         25         25         <		1200.00	-299.17	1550.00	13	Drag link to Pitman Arm	13				
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299.17         1625.00         13a         Ball Joint Articulation         Ackerman		1268.53	-301.52	1837.79	22	Upper Sector Shaft (Upper Axis Point)	22				
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809.00         1443.79         11         Spindle Alignment Point         11         1554.17         809.00           -170.66         1593.96         20         Steering Damper to Frame         20         1383.69         363.63           -450.84         1550.91         92         Track Bar @ Frame         92         1463.11         486.01           -450.84         1550.91         92         Track Bar @ Frame         94         1463.11         486.01           -45.85         1439.00         1         Radius Arm @ Frame         1         2548.80         445.85           -45.85         1334.58         31         Radius Arm @ Axle - Front         31         1659.77         445.85           -45.85         1508.52         35         Radius Arm @ Axle - Rear         35         1656.36         445.85           -45.85         1508.52         35         Radius Arm @ Axle - Rear         35         1656.36         445.85           -45.86         165.86         3         Ackerman         51.23           -12.045         151.047         37.755         46.062           -12.045         3.5150         35.755         46.062		1554.17	-974.86	1062.79	10	Tire Patch	10	1554.17	974.86	1062.79	
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445.85       1508.52       35       Radius Arm @ Axle - Rear       35       1656.36       445.85         445.85       381       1 Left       Left       Left         4013.2       2 Crub       84.564       2 Scrub       84.564         165.86       165.86       Ackerman       51.23       2 Scrub       37.755         12.045       15.047       LTurn ∠°       46.062       2 Scrub         5.000       5.150       Dry Park       6.32         6.000       0.000       SEPH - Right       -6.19	100	1659.77	-445.85	1334.58	31	Radius Arm @ Axle - Front	31	1659.77	445.85	1334.58	
381       Left         4013.2       Scrub       84.564         165.86       165.86       Ackerman       51.23         165.86       1618.00       LTurn ∠°       37.755         -12.045       12.047       CTurn ∠°       -46.062         5.000       5.150       SEPH - Right       -6.19         0.000       0.000       CO       CO       CO		1656.36	-445.85	1508.52	35	Radius Arm @ Axle - Rear	35	1656.36	445.85	1508.52	
181       Left         4013.2       Scrub       84.564         1949.72       Ackerman       51.23         165.86       165.86       R Turn ∠°       37.755         -12.045       12.047       L Turn ∠°       -46.062         5.000       5.150       SEPH - Right       -6.19         0.000       0.000       Boots       -6.19		100000000000000000000000000000000000000									
4013.2       Scrub       84.564         165.86       165.86       Ackerman       51.23         165.86       165.86       R Turn L*       37.755         -12.045       12.047       L Turn L*       -46.062         5.000       5.150       SEPH - Right       -6.19	Š	<b>ل</b> ا		381				end and spendy man or — the maddle manage and all years of a time time.	Left	Right	
165.86       165.86       Ackerman       51.23         165.86       165.86       8 Turn ∠°       37.755         -12.045       12.047       L Turn ∠°       -46.062         5.000       5.150       SEPH - Right       -6.19         0.000       0.000       British       -6.19	3	heel Base	The state of the s	4013.2				Scrub	84.564	84.546	
165.86       165.86       R Turn L°       37.755         -12.045       12.047       L Turn L°       -46.062         5.000       5.150       Dry Park       6.32         0.000       0.000       SEPH - Right       -6.19	=	ack Width		1949.72				Ackerman	51.23	52.47	
1618.00 LTurn ∠° -46.062 12.045 12.047 E.32 6.32 5.000 5.150 SEPH - Right -6.19	ā	9 to pt 11	165.86	165.86				R Turn 2°	37.755	46.063	
-12.045 12.047 : 6.32 5.000 5.150 SEPH - Right -6.19 0.000 0.000	ā	11 to pt 11	The state of the s	1618.00		•		L Turn 2°	-46.062	-37.832	
5.000       5.150       SEPH - Right       -6.19         0.000       0.000	¥	ing Pin∠°	-12.045	12.047				Dry Park	6.32	6:29	
0.000	ن	aster ∠°	5.000	5.150				SEPH - Right	-6.19	-6.69	
	Ö	amber 2°	0.000	0.000							

----Original Message-----From: Barry, Jack (J.E.)

Sent: Monday, September 17, 2001 5:22 PM

To: 'John A Thompson'; Adham El-Haw; Norb Giczewski

Cc: Hess, Harry (H.F.); Stanley, John (J.W.); 'Darren.Fugett@dana.com'

Subject: RE: P131 Linkage/ Trackbar AP1 builds

Thanks for the update on the timing requirements.

I believe we need these to be forgings to allow these trucks to run durability. I would be all set with releasing the geometry, but the king pin axis has changed slightly to allow a 0.15 deg caster split. This will result in a minor tweek to the steering geometry (the only point I see changing is the pitman arm to drag link which will change by approx 0.2 mm).

Attachment C

I think the geometry and CAD layout we are working with now is what we will build to, with the minor exception noted above. After discussing clearances this morning, I believe we should not proceed with the tubular tie rod for the AP1 build. I would like to continue working on that for the obvious weight savings, but we need to improve the package clearances and we don't have anymore time left for AP1. If we can figure something out on that, it may make sense to bring it in as a retrofit part.

We will nail the final geometry down and support the 9/19 design freeze. Thanks.

### Jack Barry

P254 Chassis Steering Phone ≥: 31-72327

Fax ( 39-00880 Address: PDC 1TK09

2----Original Message----

From: John A Thompson [mailto:John.A.Thompson@trw.com]

Sent: Monday, September 17, 2001 2:09 PM

To: jbarry@ford.com

Cc: Adham El-Haw; Norb Giczewski

Subject: P131 Linkage/ Trackbar AP1 builds

Hello Jack.

I have put together a preliminary timing plan for the AP1 prototype builds, using the assumptions that MRD is February 4th 2002, and that parts required will come from forged tooling. Traditionally forge tooling is the long lead time, and this becomes the critical path on my chart. It is my understanding that the vehicle geometry has not yet been finalized, my preliminary chart indicates that we (TRW) need to have finalized design confirmation from Ford by 9/19/01, in order to meet the MRD detailed above, with the forged components.

Jack could you please let me know what the chances are of finalizing the design by the 19th, if the MRD of 2/4/02 is still valid, and if forgings are a pre requisite for this build.? We have the option of substituting forgings with cut from solid (we may have to do this on the pitman regardless), we then trade tooling costs and time for machine costs.

Regards John

John A Thompson Staff Engineer Advanced Engineering Applications TRW Chassis Systems E Mail: john.athompson@trw.com

Tel:905-641-7420 Fax:905-641-7265 From: Barry, Jack (J.E.)

Sent: Wednesday, March 17, 2004 2:02 PM

To: Smith, Gary (G.A.)

Subject: FW: P131 Linkage/ Trackbar AP1 builds

Follow Up Flag: No Response Necessary

Flag Status: Flagged

Ref point chart.

#### Jack Barry

Truck Chassis Steering
Phone : 31-72327
Fax : 31-72327
Address: PDC 1BB17

----Original Message-----From: Barry, Jack (J.E.)

Sent: Wednesday, September 19, 2001 5:11 PM

To: 'John A-Thompson'; 'Adham El-Haw'; 'Norb Giczewski'

Cc: Hess, Harry (H.F.); Stanley, John (J.W.); 'Darren.Fugett@dana.com'; Longworth, Paul (P.R.); Parks, James (J.);

Miller, Daniel (D.)

Subject: RE: P131 Linkage/ Trackbar AP1 builds

We are frozen now! Please kick everything off for AP1.

The attached file shows the points and geometry we should be using for AP1. I had to tweek a couple of points, so please compare everything closely to what you are carrying and update to these coordinates.

The damper is packaged and we will have to use a ball stud attachment to the drag link. We found the articulation angles exceeded what a bushing can contain. I show the damper coordinates in the attached file as points 19 and 20. The ball stud is located at point 20 and it's orientation is defined by 20a. We will need to provide an attachment pad for this stud in the drag link. I have a meeting set up for next Friday to work through the interface details between the damper and the drag link, but this should be the geometry we will end up with.

John will post the CAD data in the morning.

Adham - please repost this CAD data into Metaphase with your final designs under the part numbers:

5C34-3304-B0 Drag Link 5C34-3289-B0 Tie Rod 5C34-3590-B0 Pitman Arm 5C34-3B239-A0 Track Bar

Please try to repost this as quickly as possible. I know Darren is in real need of this design detail to finalize his knuckle designs and get the FEA going.

Thanks for all your hard work - I think a victory party may soon be in order .....

### Jack Barry

P254 Chassis Steering
Phone : 31-72327
Fax : 39-00880
Address: PDC 1TK09

_	ITEM	DESCRIPTION		
	1	DOAG LINE MACHINING OUTED		
	. 2	CAP - DUAL SEAT	ttachment D	
	3	SPRING		
	4	GREASE FITTING		
	5	BEARING - NYLON		
	6	BEARING - METAL		
	7	SEAL - BOOT		
	8	STUD - DRAG LINK OUTER		
	9	KNUCKLE (OUTSIDE SUPPLIER)		
	ອ 10		NOUT HAND	<b>.</b>
	11	WASHER - STUD EXTENSION TIE ROD END (F	KIOTI TAINL	Ĭ
		SEAL - BOOT		
	12	BEARING - METAL		
•	13	BEARING - METAL		
	14	SEAL - RIGHT HAND TIE ROD END - OVER SE		
	15	CAP - W/ THROUGH HOLE (WASHER TYPE)		
	16 	SPRING		
	17	COTTER PIN (ASSEMBLED BY FORD)		
	18	CASTLE NUT (FLANGED) (ASSEMBLED BY FO	ORD)	
	19	STUD - W/ THROUGH HOLE	,	
	20	TIE ROD END MACHINING - RIGHT HAND OUT		
	21	GREASE FITTING (NOT SHOWN - ATTACHED	TO #20)	
	22	GREASE (USED IN BOTH SOCKETS)	r ma na depleme	
Α	UPDATED	TO LATEST DESIGN		BZ
-/		CHANGE DESCRIPTION	DATE	RY

Α	UPDATED TO LATEST DESIGN		BZ
REV.	CHANGE DESCRIPTION	DATE	BY



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	TOLERANCING IN H ASME Y14.5M-1994	DO NOT SCALE DRAWING	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
MACHINED - LINEAR ±0.25 - ANGULAR ±0.50*	STAMPED - LINEAR ±0.50 - ANGULAR ±0.50°	PLASTIC - LINEAR ±0.13 - ANGULAR ±0.50*	FORGED - LINEAR ±0.75 COINED ±0.50 - ANGULAR ±2.00*
DATE	DRAWN	MFG. ENG./ DATE	DESIGN ENG./ DATE
5-8-05	SFR		
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STR ASSY PURPOSED RIGHT KNUCKLE CONNECTION P131 2005 F250/F350 4X4 VEHICLES

N/A

CUSTOMER PART NUMBER N/A

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